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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/005,649	12/03/2001	Younglok Kim	I-2-172.1US	7657

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EXAMINER	
SHAH, CHIRAG G	

ART UNIT	PAPER NUMBER
2664	

DATE MAILED: 01/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/005,649	KIM ET AL.	
	Examiner	Art Unit	
	Chirag G. Shah	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-8,10,13,15 and 16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-8,10,13,15 and 16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The amendment to Figure 1 designated by a legend "Prior Art" has overcome the Drawing Objection issued in the previous office action.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-16 rejected under 35 U.S.C. 103(a) as being unpatentable over Whinnett et al. (U.S. Patent No. 6,317,411), hereinafter referred as Whinnett in view of Stewart et al. (U.S. Patent No. 6,339,612), hereinafter referred as Stewart.

Regarding claim 1, Whinnett discloses in **fig. 5** of a method for transmitting data symbols **[S1 through S4, see fig. 5]** in a CDMA communication system **[col. 1, lines 20-24]** including a transmitter **[col. 5, lines 18-20, the transmitter of fig. 5 transmits signals to antenna 120 of the subscriber unit]** having an antenna array **[antennas 100-106, fig. 5]** and a receiver **[the subscriber unit (receiver) of fig. 7, receives and demodulates a signal transmitted by the transmitter of fig. 5, see col. 6, lines 44-46]**, the method comprising the steps of:

generating a first **[S1S1, fig. 5]** and second **[S2S2, fig. 5]** data field of symbols **[transformer 88 implemented with space-time coders such as 60 of fig. 3, provide a first output S1S1S2S2, see fig. 5 and col. 5, lines 35-42]** ;

encoding said first **(S1S1, fig. 5)** and second data **(S2S2, fig. 5)** field producing complex conjugates of the symbols of said first **(S1*S1*, fig. 5)** and second **(-S2*-S2, fig. 5)** data field **[transformer 88 implemented with space-time coders encodes first S1S1 and second S2S2 and producing -S2*-S2 of first and second data fields, see fig. 5, col. 5, lines 38-42]**;

transmitting from the said transmitter **[col. 5, lines 18-20, the transmitter of fig. 5 transmits signals]** a first communication burst **[r1(S1S1S2S2) burst, fig. 5]** including said first and second data fields **[S1S1S2S2, fig. 5]** over a first antenna **[antenna 100, fig. 5]** and a second communication burst **[r2(-S2*-S2*S1*S1*) burst, fig. 5]** produced using said complex conjugates of said first and second data fields **[-S2*-S2*S1*S1*, fig. 5]** over a second antenna **[antenna 102, fig. 5]**; and

receiving and decoding at said receiver **(subscriber unit, fig. 7)** said first **[r1(S1S1S2S2) burst, fig. 5]** and second communication bursts **[r2(-S2*-S2*S1*S1*) burst, fig. 5]** to recover said first and second data fields **[as disclosed in col. 6, lines 44-52 and fig. 7, subscriber unit receives and decodes a signal transmitted by the transmitter of fig. 5]**.

Whinnett fails to explicitly disclose of the first and the second data fields separated by a midamble over a first and second respective antennas.

Stewart teaches of a joint detection of data signals in a CDMA communication system. Stewart discloses **in col.3, lines 17-26 and fig. 1 of including a midamble portion in a burst (fig. 1) having data sub-burst 1 and data sub-burst 2.** The **midamble portion of the burst of fig. 1 received on each antenna** provides a channel estimation function. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of Whinnett to include the feature of a burst having a midamble portion within data sub-burst 1 and data sub-burst 2 as taught by Stewart. **One is motivated as such in order to provide a means for channel estimation enabling an estimation of the complex-valued channel impulse response defined from each user to each antenna** *(Stewart, col. 3, lines 17-26).*

Whinnett further discloses in fig. 5 comprising the step of generating

said first **[r1(S1S1S2S2) burst, fig. 5]** by a first burst generator **[respective spreader 92 and 94 with their associated transmitting antennas 100-106 are the first and second burst generators for generating the respective communication burst for transmitting to receiver 120]** and second **[r2(-S2*-S2*S1*S1*) burst, fig. 5]** communication burst by a second burst generator **[respective spreader 92 and 94 with their associated transmitting antennas 100-106]** wherein said first communication burst comprises said first data field **(S1S1)** followed by said second data field **(S2S2);** and

said second **[r2(-S2*-S2*S1*S1*) burst, fig. 5]**communication burst comprises said negative complex conjugate of said second data field **(–S2*-S2*, fig. 5)** followed by said complex conjugate of said first data field **(S1*S1*, fig. 5).**

Whinnett fails to explicitly disclose each of the first and the second communications burst having first and second data fields separated by a midamble over a first and second respective antennas.

Stewart teaches of a joint detection of data signals in a CDMA communication system. Stewart discloses **in col.3, lines 17-26 and fig. 1 of including a midamble portion in a burst (fig. 1) having data sub-burst 1 and data sub-burst 2**. The **midamble portion of the burst of fig. 1 for each burst received on each antenna** provides a channel estimation function. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of Whinnett to include the feature of a burst having a midamble portion within data sub-burst 1 and data sub-burst 2 as taught by Stewart. **One is motivated as such in order to provide a means for channel estimation enabling an estimation of the complex-valued channel impulse response defined from each user to each antenna** *(Stewart, col. 3, lines 17-26).*

Regarding claim 7, Whinnett discloses in **fig. 5** of a CDMA **[col. 1, lines 20-24]** communication system including a base station **[col. 5, lines 18-20, the transmitter of fig. 5 transmits signals]** and a user equipment (UE) **[subscriber unit, fig. 7 and col. 6, lines 44-46],** comprising:

an encoder **[transformer 88 implemented with space-time coders encodes, col. 5, lines 38-42]** which encodes a first **(S1S1, fig. 5)** and second data field of symbols **(S2S2, fig. 5)** to produce complex conjugates of the symbols of said first **(S1*S1*, fig. 5)** and second **(-S2*-S2, fig. 5)** data field **[transformer 88 implemented with space-time**

coders encodes first S1S1 and second S2S2 and producing -S2*-S2 of first and second data fields, see fig. 5, col. 5, lines 38-42];

a first **[antenna 100, fig. 5]** and second antenna **[antenna 102, fig. 5]** of a transmitter which transmits RF signals including a first **[r1(S1S1S2S2) burst, fig. 5]** and second communication burst **[r2, fig. 5],** wherein said first communication burst **[r1(S1S1S2S2) burst, fig. 5]** including said first (**S1S1, fig. 5**) and second (**S2S2, fig. 5**) data fields is transmitted by said first antenna **[antenna 100, fig. 5]** and a second communication burst **[r2(-S2*-S2*S1*S1*) burst, fig. 5]** produced using said complex conjugates of said first and second data fields [**-S2*-S2*S1*S1*, fig. 5**] over a second antenna **[antenna 102, fig. 5]**; and

a receiver **(subscriber unit, fig. 7)** comprising a decoder which decodes said RF signals to recover said first **[r1(S1S1S2S2) burst, fig. 5]** and second **[r2(-S2*-S2*S1*S1*) burst, fig. 5]** data fields [**as disclosed in col. 6, lines 44-52 and fig. 7, subscriber unit receives and decodes a signal transmitted by the transmitter of fig. 5**].

Whinnett fails to explicitly disclose of the first and the second data fields separated by a midamble over a first and second respective antennas.

Stewart teaches of a joint detection of data signals in a CDMA communication system. Stewart discloses **in col.3, lines 17-26 and fig. 1 of including a midamble portion in a burst (fig. 1) having data sub-burst 1 and data sub-burst 2**. The **midamble portion of the burst of fig. 1 received on each antenna** provides a channel estimation function. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to

modify the teachings of Whinnett to include the feature of a burst having a midamble portion within data sub-burst 1 and data sub-burst 2 as taught by Stewart. **One is motivated as such in order to provide a means for channel estimation enabling an estimation of the complex-valued channel impulse response defined from each user to each antenna** *(Stewart, col. 3, lines 17-26).*

Whinnett further discloses in fig. 5 comprising the step of generating

said first **[r1(S1S1S2S2) burst, fig. 5]** by a first burst generator **[respective spreader 92 and 94 with their associated transmitting antennas 100-106 are the first and second burst generators for generating the respective communication burst for transmitting to receiver 120]** and second **[r2(-S2*-S2*S1*S1*) burst, fig. 5]** communication burst by a second burst generator **[respective spreader 92 and 94 with their associated transmitting antennas 100-106]** wherein said first communication burst comprises said first data field **(S1S1)** followed by said second data field **(S2S2);** and

said second **[r2(-S2*-S2*S1*S1*) burst, fig. 5]**communication burst comprises said negative complex conjugate of said second data field **(–S2*-S2*, fig. 5)** followed by said complex conjugate of said first data field **(S1*S1*, fig. 5)**.

Whinnett fails to explicitly disclose each of the first and the second communications burst having first and second data fields separated by a midamble over a first and second respective antennas.

Stewart teaches of a joint detection of data signals in a CDMA communication system. Stewart discloses **in col.3, lines 17-26 and fig. 1 of including a midamble portion in a burst (fig. 1) having data sub-burst 1 and data sub-burst 2**. The **midamble portion of the**

burst of fig. 1 for each burst received on each antenna provides a channel estimation function. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of Whinnett to include the feature of a burst having a midamble portion within data sub-burst 1 and data sub-burst 2 as taught by Stewart. **One is motivated as such in order to provide a means for channel estimation enabling an estimation of the complex-valued channel impulse response defined from each user to each antenna** *(Stewart, col. 3, lines 17-26).*

Regarding claim 12, Whinnett discloses in fig. 5 a transmitter **[col. 5, lines 18-20, the transmitter of fig. 5 transmits signals]** which transmits data symbols **[S1S1S2S2, fig. 5]** in a CDMA **[col. 1, lines 20-24]** communication system including a base station **[col. 5, lines 18-20, the transmitter of fig. 5 transmits signals]** and a user equipment (UE) **[subscriber unit, fig. 7 and col. 6, lines 44-46]**, said transmitter **[col. 5, lines 18-20, the transmitter of fig. 5 transmits signals]** comprising:

an encoder **[transformer 88 implemented with space-time coders encodes, col. 5, lines 38-42]** which encodes a first **(S1S1, fig. 5)** and second data field of symbols **(S2S2, fig. 5)** to produce complex conjugates of the symbols of said first **(S1*S1*, fig. 5)** and second **(-S2*-S2, fig. 5)** data field **[transformer 88 implemented with space-time coders encodes first S1S1 and second S2S2 and producing -S2*-S2 of first and second data fields, see fig. 5, col. 5, lines 38-42]**;

a first **[antenna 100, fig. 5]** and second antenna **[antenna 102, fig. 5]** of a transmitter which transmits RF signals including a first **[r1(S1S1S2S2) burst, fig. 5]** and

second communication burst **[r2(-S2*-S2*S1*S1*) burst, fig. 5]**, wherein said first communication burst **[r1(S1S1S2S2) burst, fig. 5]** including said first (**S1S1, fig. 5**) and second (**S2S2, fig. 5**) data fields is transmitted by said first antenna **[antenna 100, fig. 5]** and a second communication burst **[r2(-S2*-S2*S1*S1*) burst, fig. 5]** produced using said complex conjugates of said first and second data fields **[-S2*-S2*S1*S1*, fig. 5]** over a second antenna **[antenna 102, fig. 5]**; and

Whinnett fails to explicitly disclose of the first and the second data fields separated by a midamble over a first and second respective antennas.

Stewart teaches of a joint detection of data signals in a CDMA communication system. Stewart discloses **in col.3, lines 17-26 and fig. 1 of including a midamble portion in a burst (fig. 1) having data sub-burst 1 and data sub-burst 2**. The **midamble portion of the burst of fig. 1 received on each antenna** provides a channel estimation function. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of Whinnett to include the feature of a burst having a midamble portion within data sub-burst 1 and data sub-burst 2 as taught by Stewart. **One is motivated as such in order to provide a means for channel estimation enabling an estimation of the complex-valued channel impulse response defined from each user to each antenna** *(Stewart, col. 3, lines 17-26).*

Whinnett further discloses in fig. 5 comprising the step of generating

said first **[r1(S1S1S2S2) burst, fig. 5]** by a first burst generator **[respective spreader 92 and 94 with their associated transmitting antennas 100-106 are the first and second burst generators for generating the respective communication burst for transmitting to receiver**

120] and second **[r2(-S2*-S2*S1*S1*) burst, fig. 5]** communication burst by a second burst generator **[respective spreader 92 and 94 with their associated transmitting antennas 100-106]** wherein said first communication burst comprises said first data field **(S1S1)** followed by said second data field **(S2S2);** and

said second **[r2(-S2*-S2*S1*S1*) burst, fig. 5]**communication burst comprises said negative complex conjugate of said second data field **(–S2*-S2*, fig. 5)** followed by said complex conjugate of said first data field **(S1*S1*, fig. 5)**.

Whinnett fails to explicitly disclose each of the first and the second communications burst having first and second data fields separated by a midamble over a first and second respective antennas.

Stewart teaches of a joint detection of data signals in a CDMA communication system. Stewart discloses **in col.3, lines 17-26 and fig. 1 of including a midamble portion in a burst (fig. 1) having data sub-burst 1 and data sub-burst 2**. The **midamble portion of the burst of fig. 1 for each burst received on each antenna** provides a channel estimation function. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of Whinnett to include the feature of a burst having a midamble portion within data sub-burst 1 and data sub-burst 2 as taught by Stewart. **One is motivated as such in order to provide a means for channel estimation enabling an estimation of the complex-valued channel impulse response defined from each user to each antenna** *(Stewart, col. 3, lines 17-26).*

Regarding claims 2, 8 and 13, Whinnett discloses wherein an encoder [**transformer 88 implemented with space-time coders encodes, col. 5, lines 38-42**] negates the complex conjugate of the second data field **(–S2*-S2*, fig. 5)[see fig. 5 and col. 3, lines 5-10]** as claims.

Regarding claim 4, Whinnett discloses of a subscriber unit receives and decodes a signal transmitted by the transmitter of fig. 5. *Whinnett fails to explicitly disclose wherein said receiving and decoding step comprises: estimating a channel response of said first and second communication bursts using said bursts' midambles; and detecting the symbols of said first and second communication bursts in response to said channel response.* Stewart discloses in **col. 4, lines 51-55 and in col. 3, lines 17-26, of a DSP (fig. 4) receiver the receives signal vectors S(ka) (bursts) and extracts/decodes the midamble portion of each S(ka) and generates a channel estimate and impulse response from each user to antenna based on each burst.** Stewart detects the symbols of the burst signals in response to the estimation by further discloses in **col. 3, lines 22-40 that the DSP receiver includes a detector, which uses the resulting set of convolved signal vectors (bursts) to extract the data symbol information from each user and outputs soft-decision symbol information for used in subsequent error control decoding**. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of Whinnett to include the feature of a burst having a midamble portion that enable detection of the symbols based on midamble portion as taught by Stewart. **One is motivated as such in order to provide a means for channel estimation and jointly provide detection of data symbols transmitted over a communication channel** *(Stewart, col. 1, lines 7-11 and col. 3, lines 17-26).*

Regarding claim 5, 10 and 15, Whinnett discloses wherein a base station **[col. 6, lines 44-46, the transmitter of fig. 5 transmits signals to the subscriber unit, establishing that the transmitter of fig. 5 is a base station which serves the user]** includes said receiver **[base station/transmitter unit of fig. 5 in a CDMA system inherently includes a receiver for receiving data via antenna 100-106]** and a user equipment includes **[subscriber unit, fig. 7 and col. 6, lines 44-46]** said transmitter **[subscriber unit in fig. 7 in a CDMA system inherently includes a transmitter for sending and receiving data via antenna 120].**

Regarding claim 6, 11 and 16, Whinnett discloses wherein a user equipment (UE) **[subscriber unit, fig. 7 and col. 6, lines 44-46]** includes said receiver **[antenna 120, fig. 7]** and a base station includes said transmitter **[col. 6, lines 44-46, the transmitter of fig. 5 transmits signals to the subscriber unit, establishing that the transmitter of fig. 5 is a base station which serves the user].**

Response to Arguments

Applicant's arguments filed 11/21/05 have been fully considered but they are not persuasive. Applicant argues that the present invention transmits over a first antenna a first communication burst with a fist data field followed by a midamble followed by a second data field and a second antenna transmits a second communication burst with a negative complex conjugate of the second data field followed by a midamble followed by a complex conjugate of the first data field and neither Whinnett nor Stewart alone or in combination teach or suggest

such an arrangement. Examiner respectfully disagrees and provides a detailed description with a motivation of how Whinnett in view of Stewart teaches and/or suggests such an arrangement.

For example, for claim 1, Whinnett discloses in **fig. 5** of a method for transmitting data symbols **[S1 through S4, see fig. 5]** in a CDMA communication system **[col. 1, lines 20-24]** including a transmitter **[col. 5, lines 18-20, the transmitter of fig. 5 transmits signals to antenna 120 of the subscriber unit]** having an antenna array **[antennas 100-106, fig. 5]** and a receiver **[the subscriber unit (receiver) of fig. 7, receives and demodulates a signal transmitted by the transmitter of fig. 5, see col. 6, lines 44-46]**, the method comprising the steps of:

generating a first **[S1S1, fig. 5]** and second **[S2S2, fig. 5]** data field of symbols **[transformer 88 implemented with space-time coders such as 60 of fig. 3, provide a first output S1S1S2S2, see fig. 5 and col. 5, lines 35-42]** ;

encoding said first **(S1S1, fig. 5)** and second data **(S2S2, fig. 5)** field producing complex conjugates of the symbols of said first **(S1*S1*, fig. 5)** and second **(-S2*-S2, fig. 5)** data field **[transformer 88 implemented with space-time coders encodes first S1S1 and second S2S2 and producing -S2*-S2 of first and second data fields, see fig. 5, col. 5, lines 38-42]**;

transmitting from the said transmitter **[col. 5, lines 18-20, the transmitter of fig. 5 transmits signals]** a first communication burst **[r1(S1S1S2S2) burst, fig. 5]** including said first and second data fields **[S1S1S2S2, fig. 5]** over a first antenna **[antenna 100, fig. 5]** and a second communication burst **[r2(-S2*-S2*S1*S1*) burst, fig. 5]** produced using

said complex conjugates of said first and second data fields [**-S2*-S2*S1*S1*, fig. 5]** over a second antenna **[antenna 102, fig. 5];** and

receiving and decoding at said receiver **(subscriber unit, fig. 7)** said first **[r1(S1S1S2S2) burst, fig. 5]** and second communication bursts **[r2(-S2*-S2*S1*S1*) burst, fig. 5]** to recover said first and second data fields [**as disclosed in col. 6, lines 44-52 and fig. 7, subscriber unit receives and decodes a signal transmitted by the transmitter of fig. 5**].

Whinnett fails to explicitly disclose of the first and the second data fields separated by a midamble over a first and second respective antennas.

Stewart teaches of a joint detection of data signals in a CDMA communication system. Stewart discloses **in col.3, lines 17-26 and fig. 1 of including a midamble portion in a burst (fig. 1) having data sub-burst 1 and data sub-burst 2**. The **midamble portion of the burst of fig. 1 received on each antenna** provides a channel estimation function. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of Whinnett to include the feature of a burst having a midamble portion within data sub-burst 1 and data sub-burst 2 as taught by Stewart. **One is motivated as such in order to provide a means for channel estimation enabling an estimation of the complex-valued channel impulse response defined from each user to each antenna** *(Stewart, col. 3, lines 17-26).*

Whinnett further discloses in fig. 5 comprising the step of generating

said first **[r1(S1S1S2S2) burst, fig. 5]** by a first burst generator **[respective spreader 92 and 94 with their associated transmitting antennas 100-106 are the first and second burst**

generators for generating the respective communication burst for transmitting to receiver 120] and second **[r2(-S2*-S2*S1*S1*) burst, fig. 5]** communication burst by a second burst generator **[respective spreader 92 and 94 with their associated transmitting antennas 100-106]** wherein said first communication burst comprises said first data field **(S1S1)** followed by said second data field **(S2S2);** and

said second **[r2(-S2*-S2*S1*S1*) burst, fig. 5]**communication burst comprises said negative complex conjugate of said second data field **(–S2*-S2*, fig. 5)** followed by said complex conjugate of said first data field **(S1*S1*, fig. 5)**.

Whinnett fails to explicitly disclose each of the first and the second communications burst having first and second data fields separated by a midamble over a first and second respective antennas.

Stewart teaches of a joint detection of data signals in a CDMA communication system. Stewart discloses **in col.3, lines 17-26 and fig. 1 of including a midamble portion in a burst (fig. 1) having data sub-burst 1 and data sub-burst 2**. The **midamble portion of the burst of fig. 1 for each burst received on each antenna** provides a channel estimation function. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of Whinnett to include the feature of a burst having a midamble portion within data sub-burst 1 and data sub-burst 2 as taught by Stewart. **One is motivated as such in order to provide a means for channel estimation enabling an estimation of the complex-valued channel impulse response defined from each user to each antenna** *(Stewart, col. 3, lines 17-26).*

Based on the arrangement and motivation provided in the rejection, Whinnett in view of Stewart clearly teaches and/or suggest the arrangement as claimed. Therefore, claims 1, 7 and 12 and its dependent claims remain rejected.

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Or faxed to:

(703)305-3988, (for formal communications intended for entry)

Or:

(703)305-3988 (for informal or draft communications, please label "Proposed" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2021 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chirag G. Shah whose telephone number is 571-272-3144. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cgs
December 29, 2005

Ajit Patel
Primary Examiner